King County

South Park Bridge

Critical Infrastructure in Need of Replacement

King County Department
of Transportation

February 26, 2008

Agenda

1. **Regional Importance of South Park Bridge** – vital to S & SW King County and South Seattle
2. **Project Urgency** – seismically vulnerable bridge in poor condition
3. **Implications of a Bridge Closure** – impacts to local / regional traffic and local businesses
4. **Project Status** – EIS and design efforts underway
5. **Project Funding** – three phases

Regional Importance

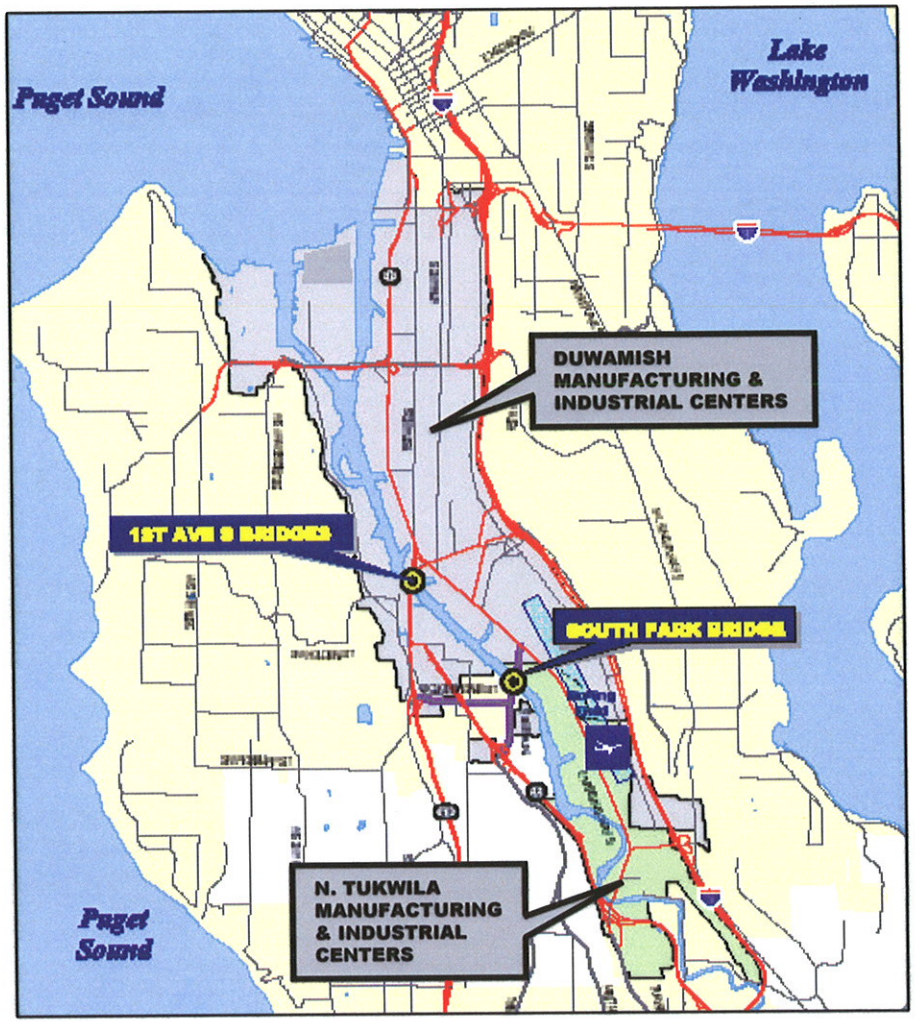
Bridge vital to Manufacturing & Industrial Centers

- Critical T-1 facility* carries over 10 million tons of freight/year in N. Tukwila & Duwamish Manufacturing & Industrial Centers
- 20,000 vehicles per day
- 2,600 trucks/day - 13%

(compare to 5% at First Ave S Br)

- Limited river crossings in industrial area
- Serves Seattle's South Park community

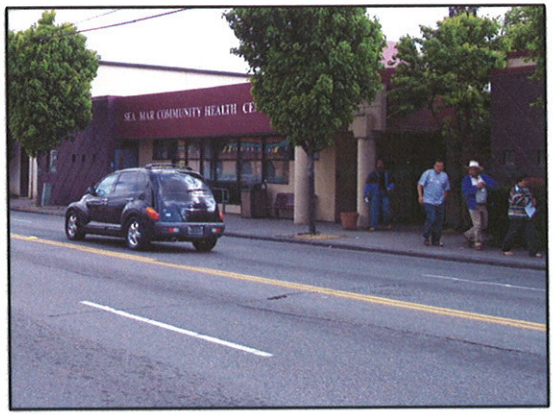
* Classified by WSDOT with assistance from the County Road Admin Board (CRAB), and Assoc of Washington Cities (AWC)



Bridge supports South Park business community

The Boeing Co. & King County International Airport

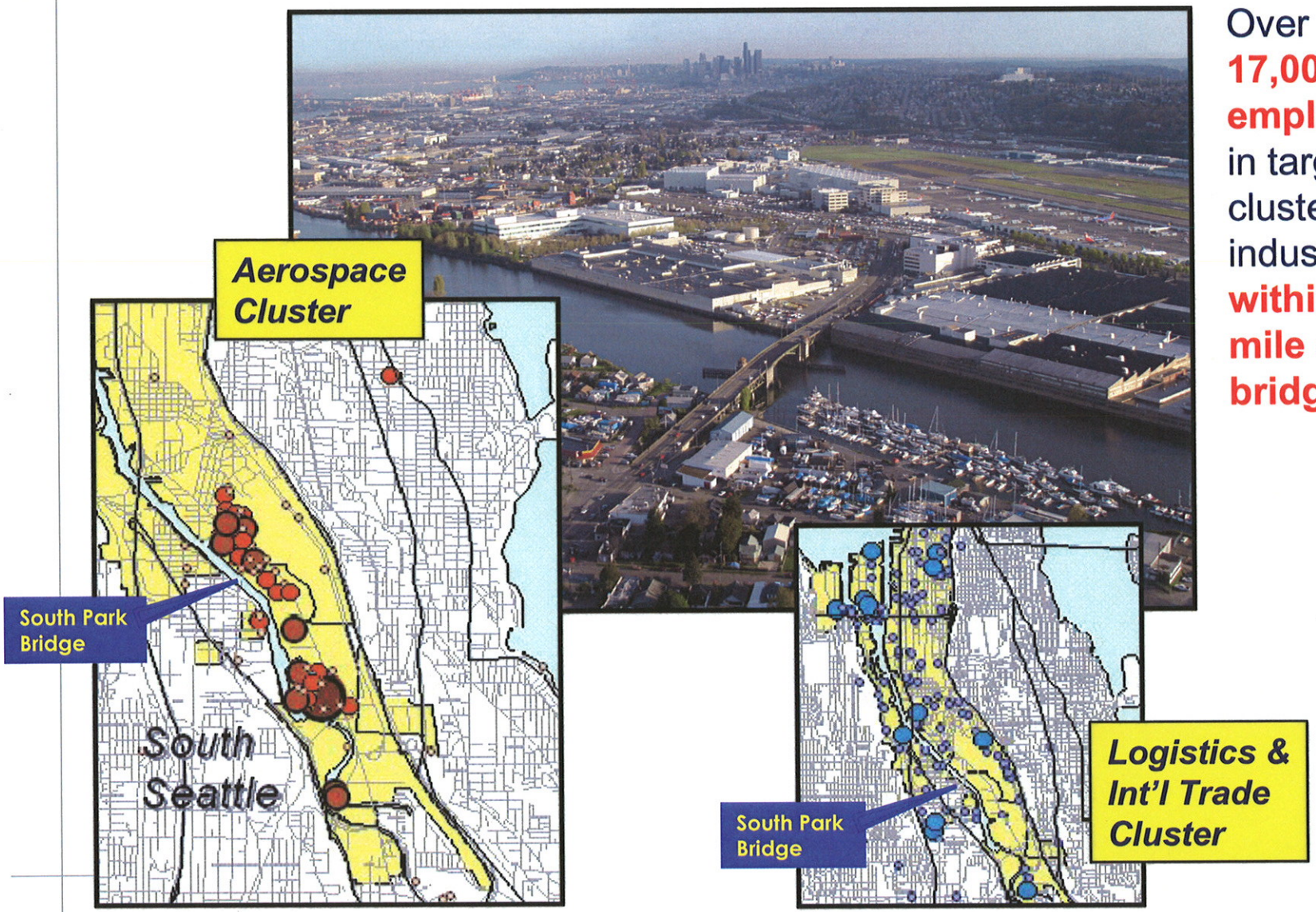
Diverse South Park business corridor



Sea Mar Clinic – medical facility for minorities – largest employer in South Park (400 employees)

Delta Marine – yacht builder – 2nd largest employer in South Park (350 employees)

Industrial Clusters surround bridge

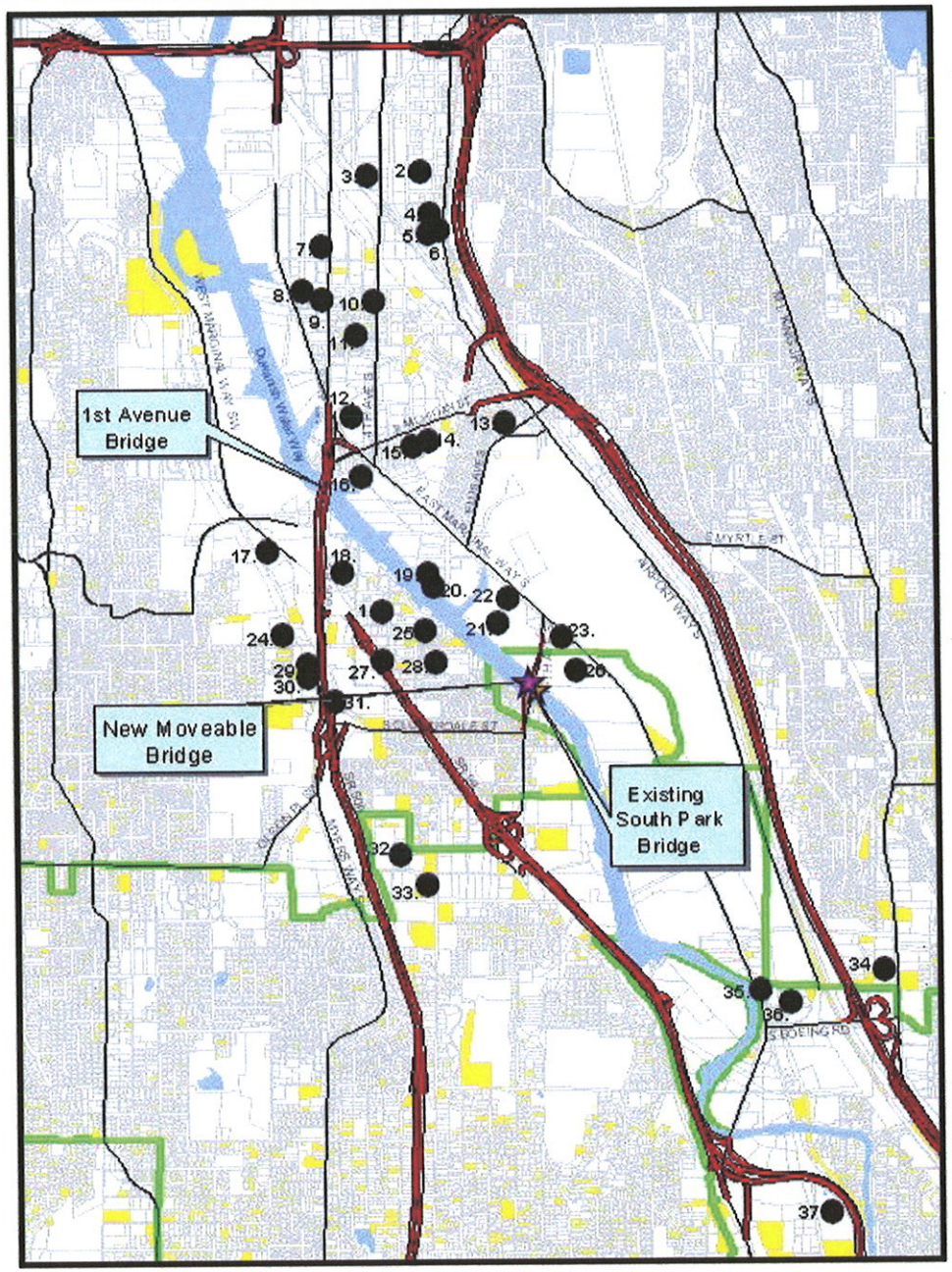


Over **17,000 employed** in targeted cluster industries **within one mile of bridge**

Truck Survey Results

A Typical Day

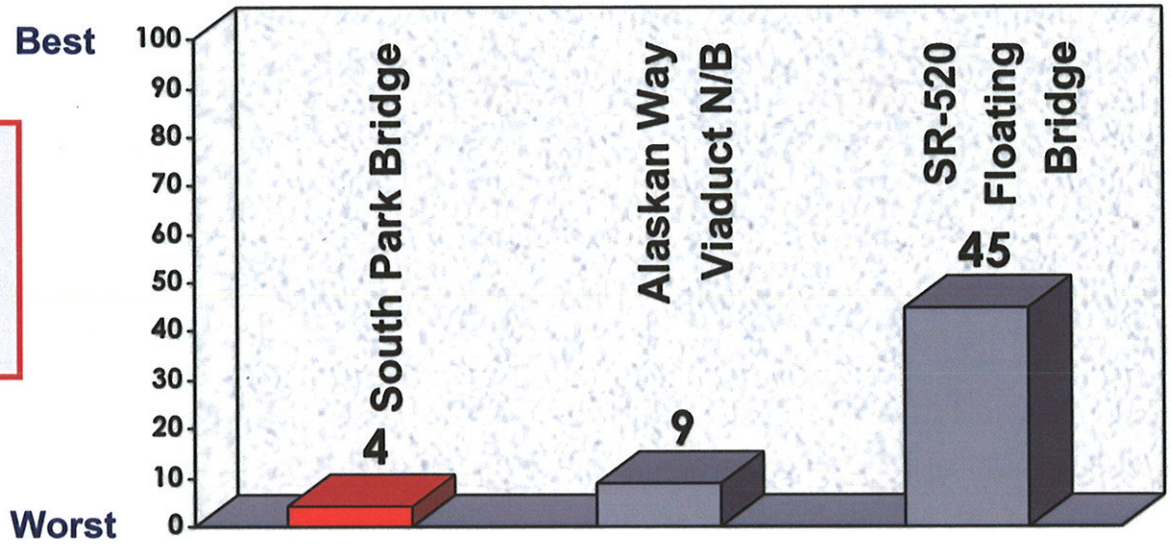
- Each ● represents a business that used bridge
- Bridge used by local businesses
- Users spread out among M & I centers



Project Urgency

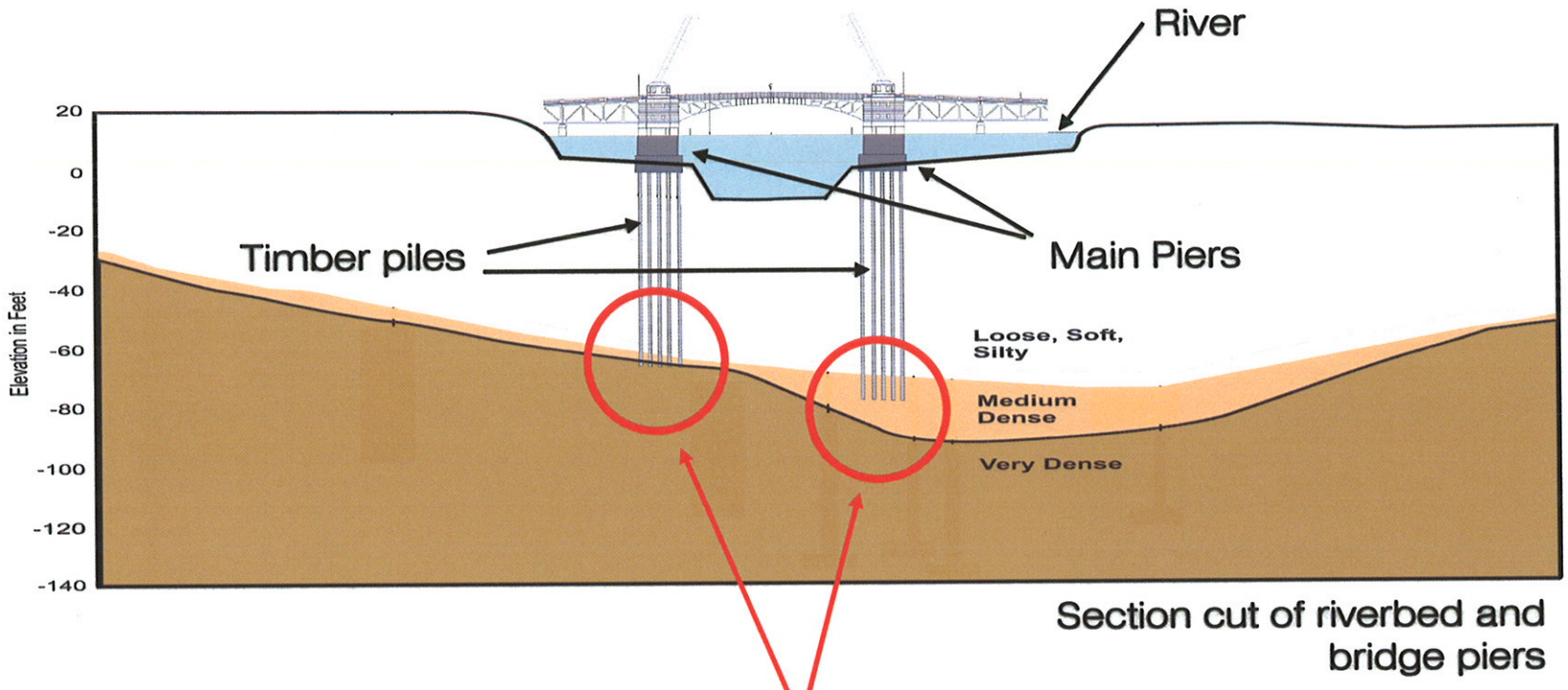
Federal Ratings of Other Regional Bridges

Project Urgency



- Four major South Park Bridge deficiencies **CAN'T BE FIXED**
- 2006 Peer Review recommends immediate planning for replacement or closure of bridge due to various risks of continued bridge operation

Project Urgency

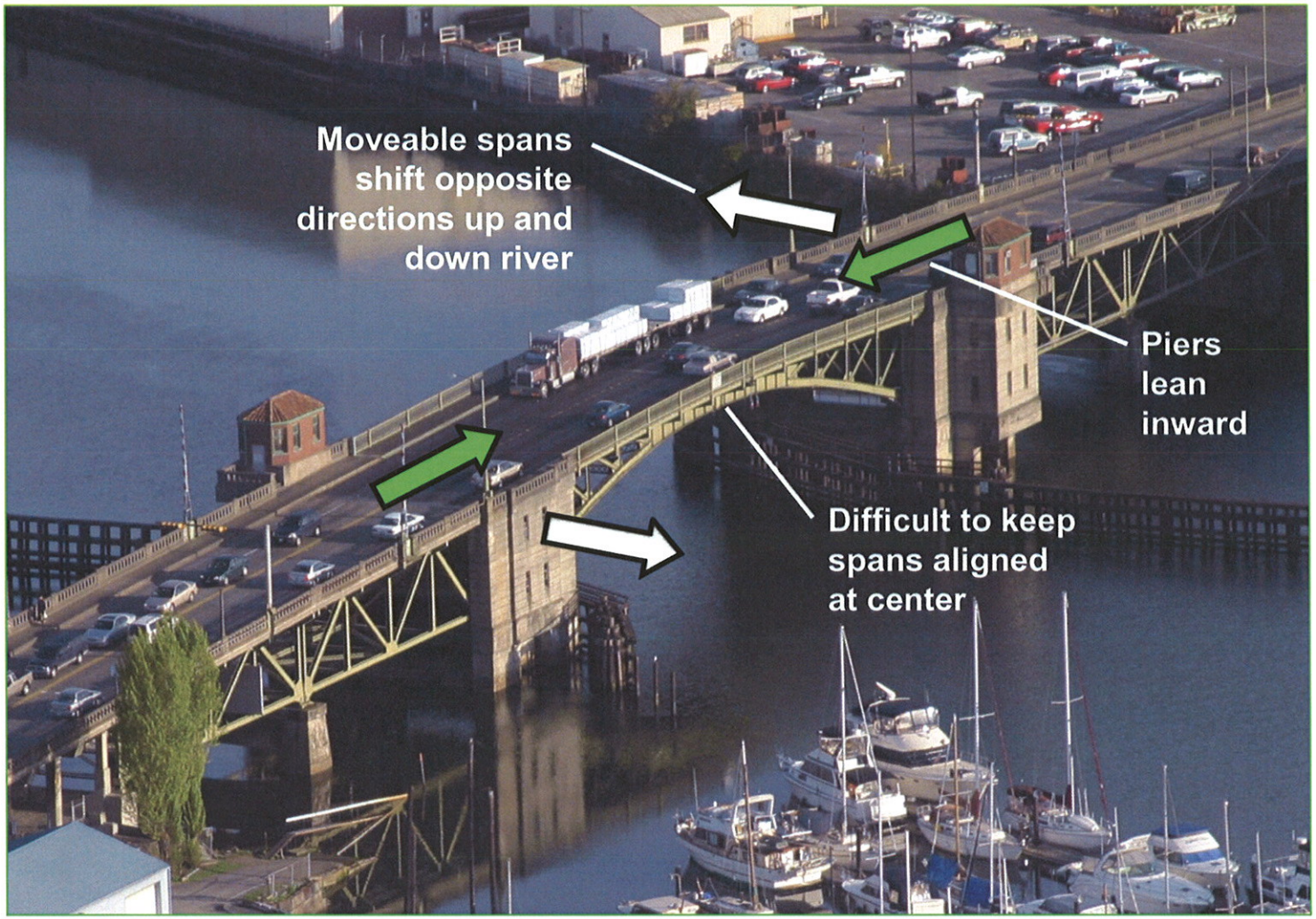


Section cut of riverbed and bridge piers

FLAW 1

Piling inadequate to support bridge piers…

…causing main piers to move – CAN'T BE FIXED



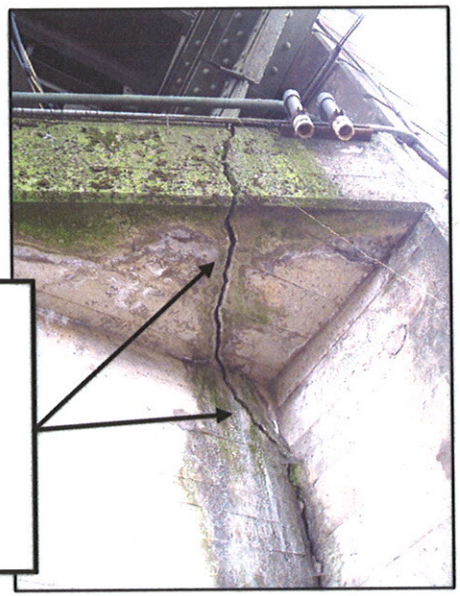
Project Urgency

FLAW 2

Concrete piers cracking throughout

Cracks are "active" under traffic loads and during bridge openings

CAN'T BE FIXED



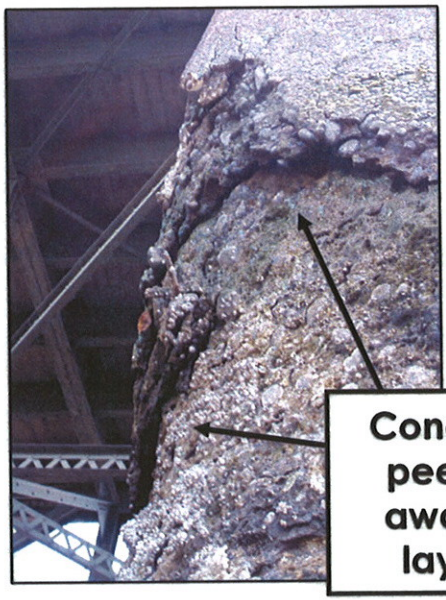
Cracks under main truss bearing point

Cracks in pier wall

FLAW 3

Concrete self-destructing Chemical imbalance

CAN'T BE FIXED

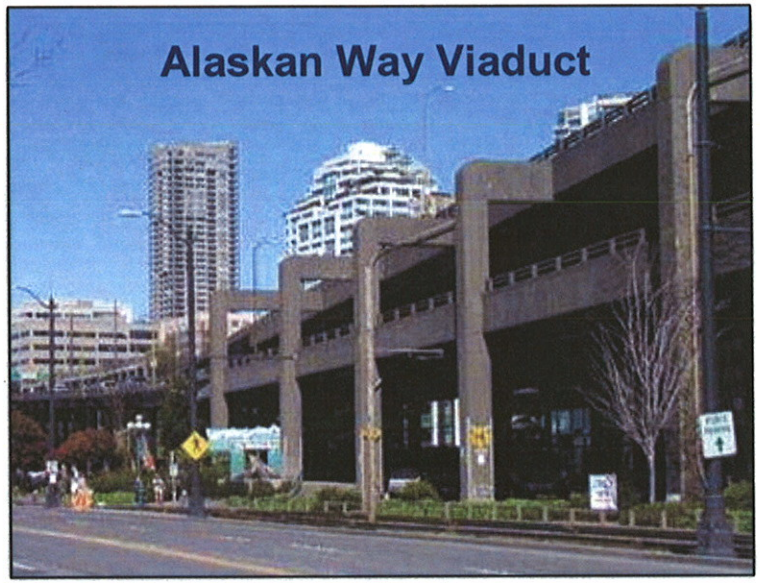


Concrete peeling away in layers

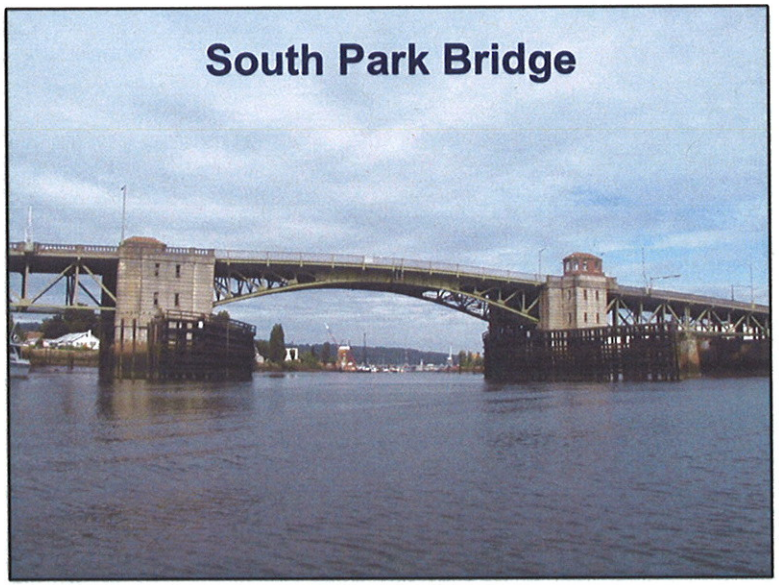
FLAW 4

Bridge has been weakened by three earthquakes in 1949, 1965, and 2001 and is

7 times more vulnerable than the viaduct



1 in 20 chance of significant earthquake damage in next 10 years.



1 in 3 chance of significant earthquake damage in next 10 years.

Load Testing – March 2006

- Strain gages mounted on each portion of bridge
- Truck of known weight driven across bridge and data recorded
- Calculations determine load capability of bridge

Test results? Concrete approach spans are safe, but marginal for legal loads. Steel spans have more capacity.

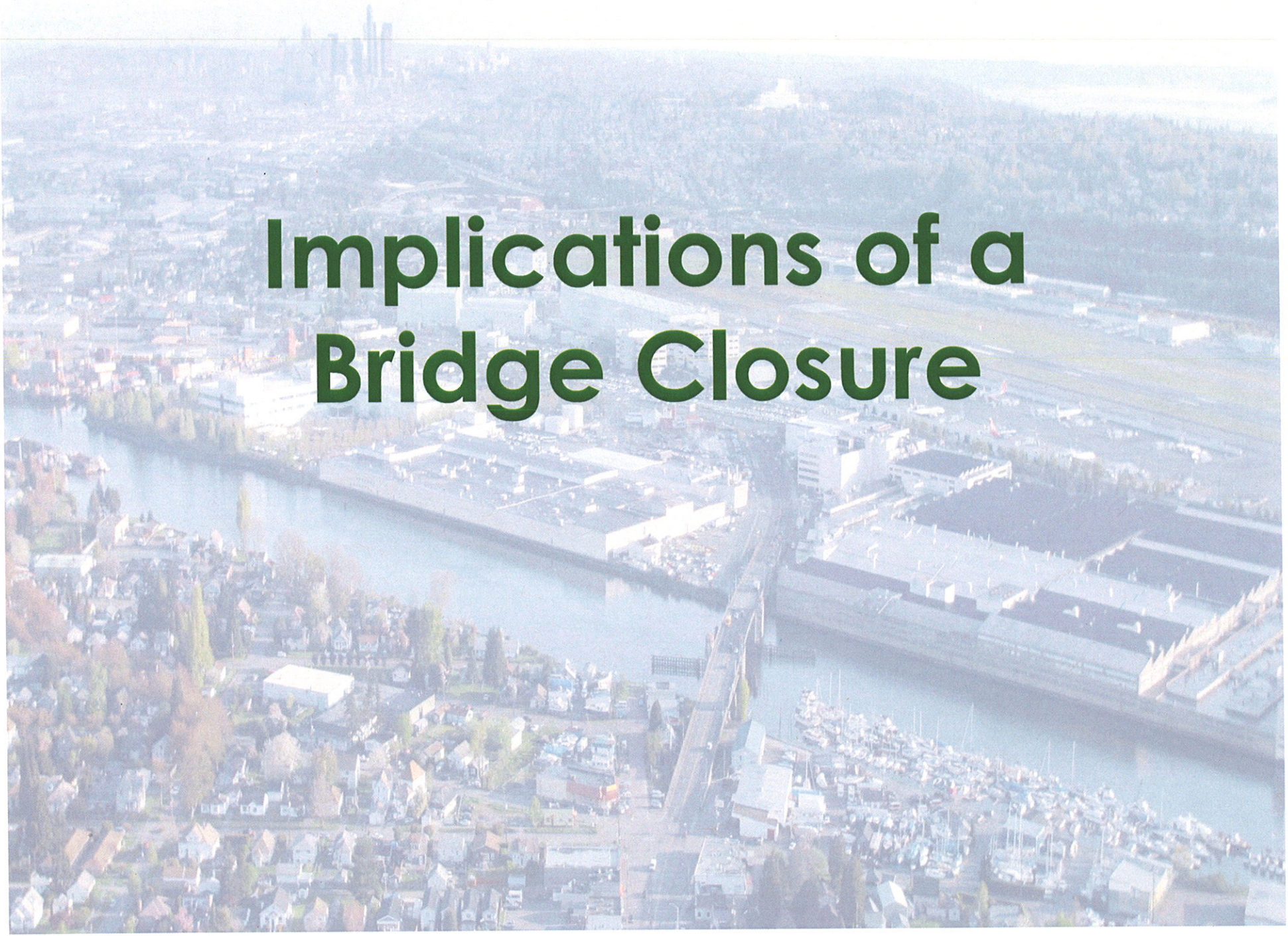
Condition Summary

- Poor condition
- Seismically vulnerable
- Can't be fixed
- Load capacity of bridge concrete spans is marginal
- Unable to calculate load capacity of main bridge piers due to widespread cracking and movement

Damage from Nisqually Earthquake 2001

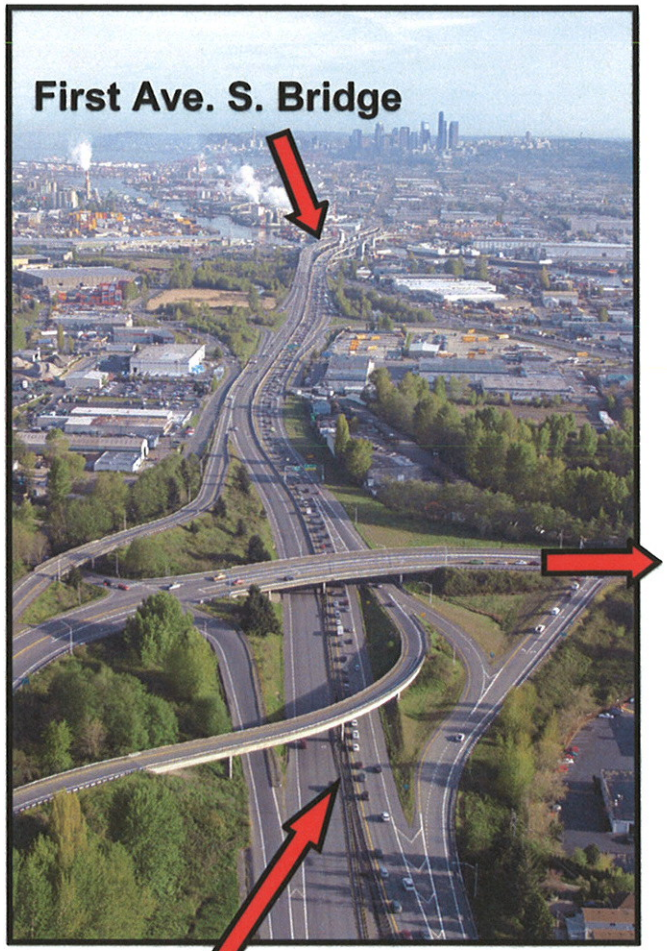
Therefore, if construction funding is not secured,

bridge closure will be initiated in 2010.

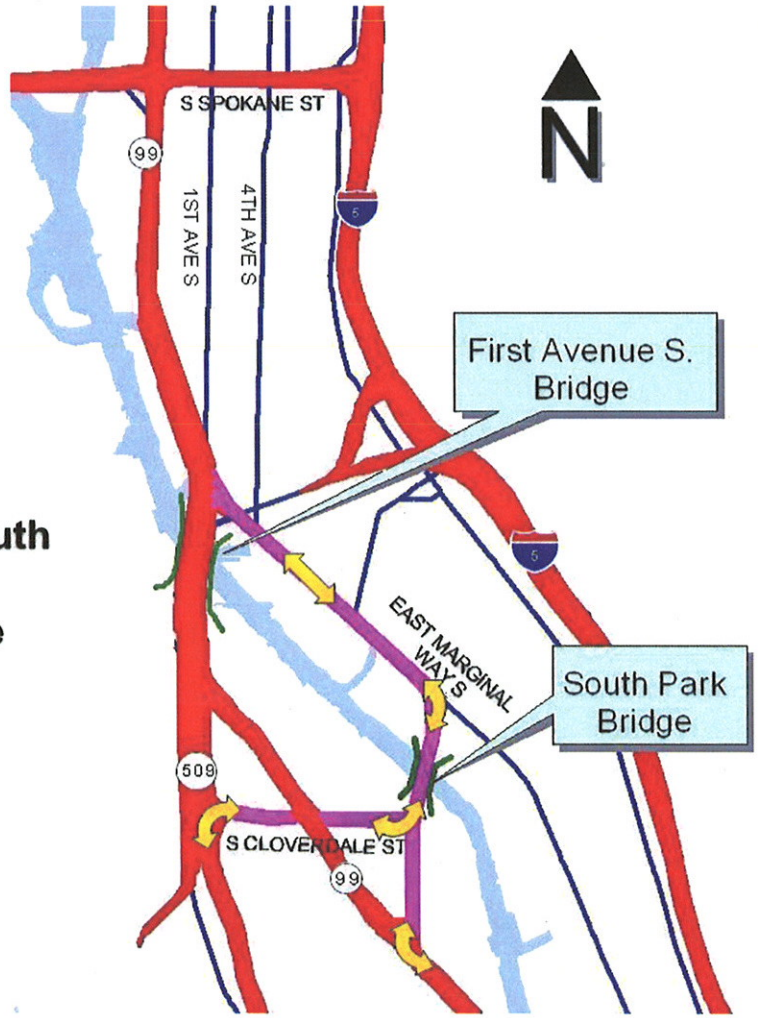


Implications of a Bridge Closure

Bridge important to regional traffic flow

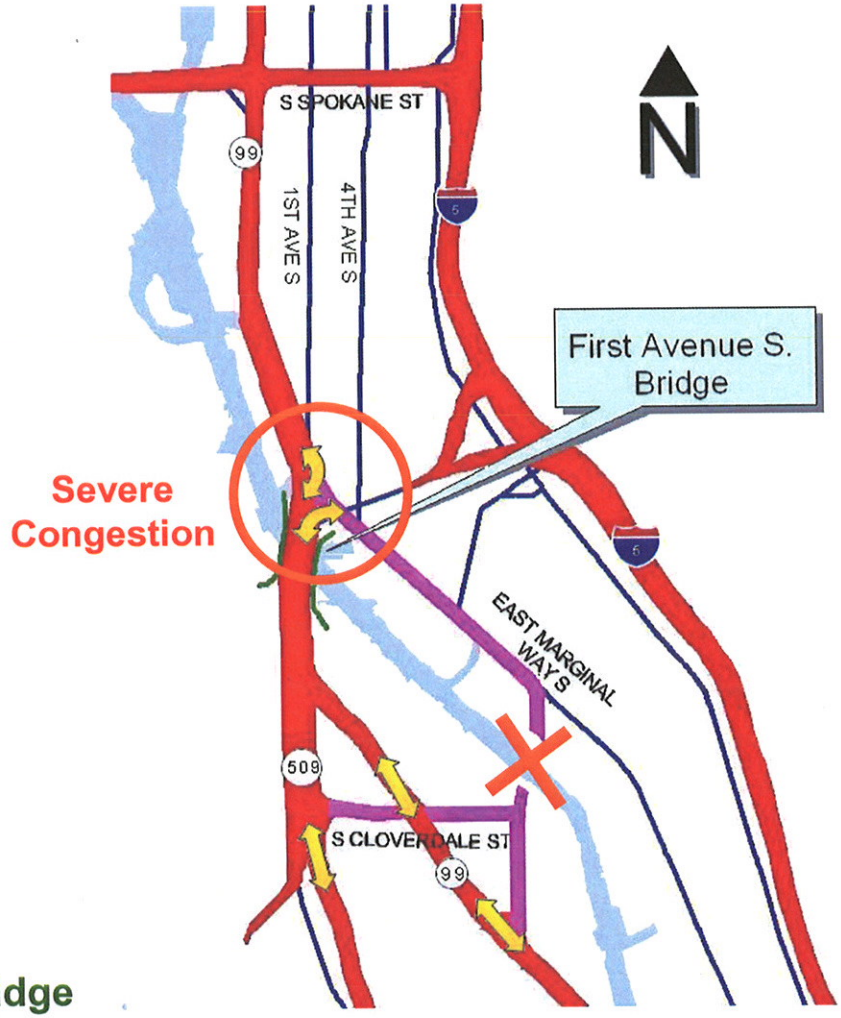


Existing traffic queues already long approaching First Ave. S. Bridge



If the South Park Bridge is closed…

- Delays double in both AM & PM commutes at First Ave. S. Bridge intersections
- Economic impact to South Park businesses with dead end arterial (14th Ave S)
- Freight mobility worsens
- Pedestrian / bicycle access to E. Marginal Way transit lost
- Less redundancy in road network in crossing Duwamish River

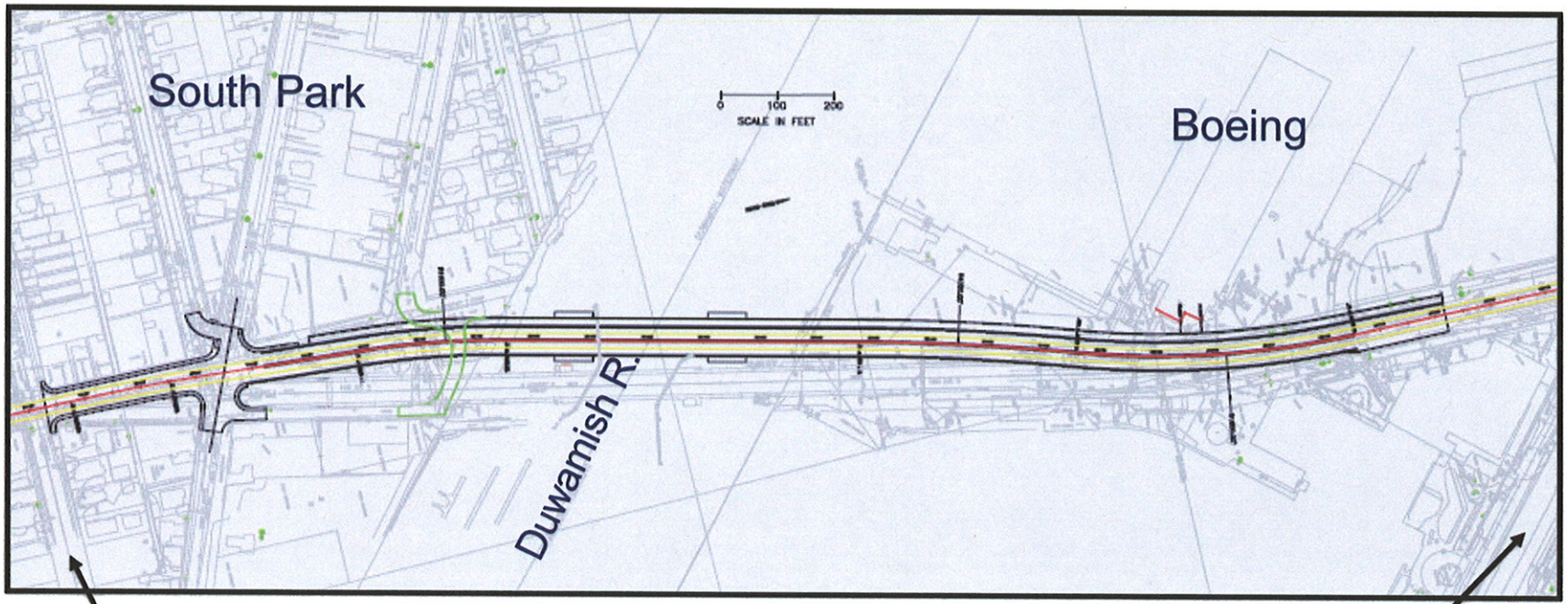


Note – The newer First Avenue South Bridge was built in 1996 under assumption that South Park Bridge would remain in service.

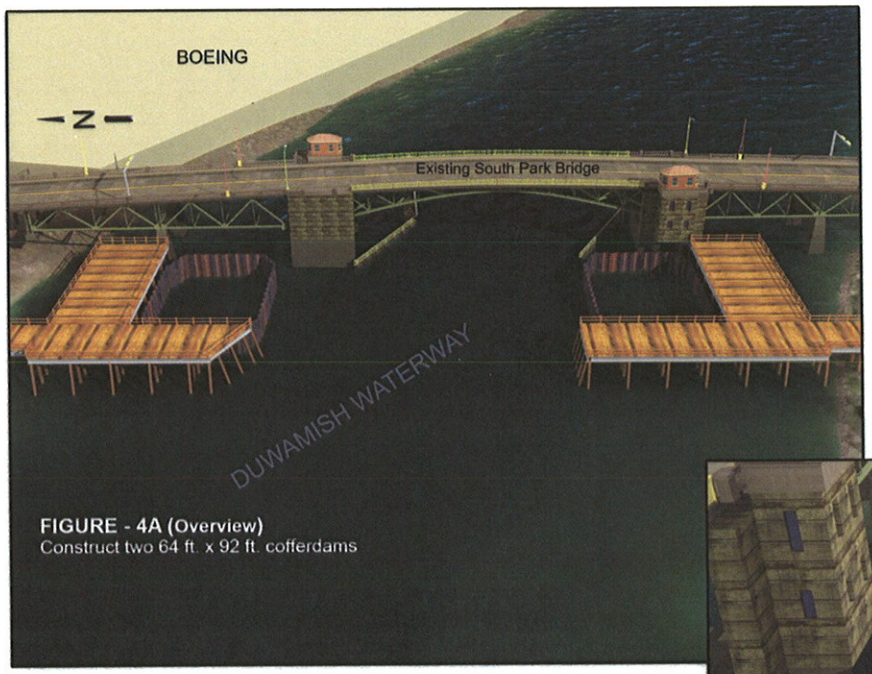
Project Status

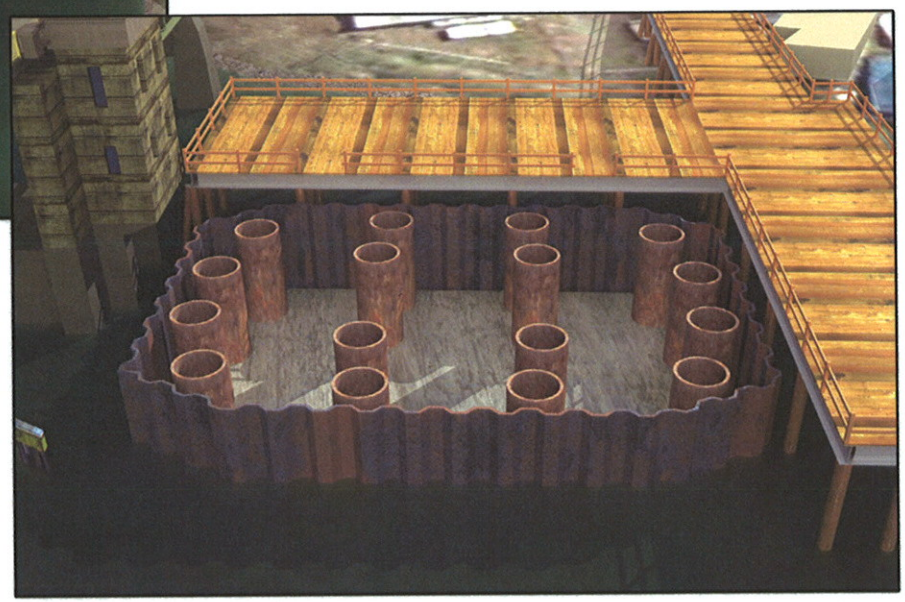
Replacement Bridge- *design begins April 2008*

- New moveable bridge downriver and parallel to existing bridge
- Project limits – S. Cloverdale St. to E. Marginal Way S.
- Minimal disruption to traffic - 4 total weeks of bridge closure during 33 months of construction
- Will continue to maintain existing bridge

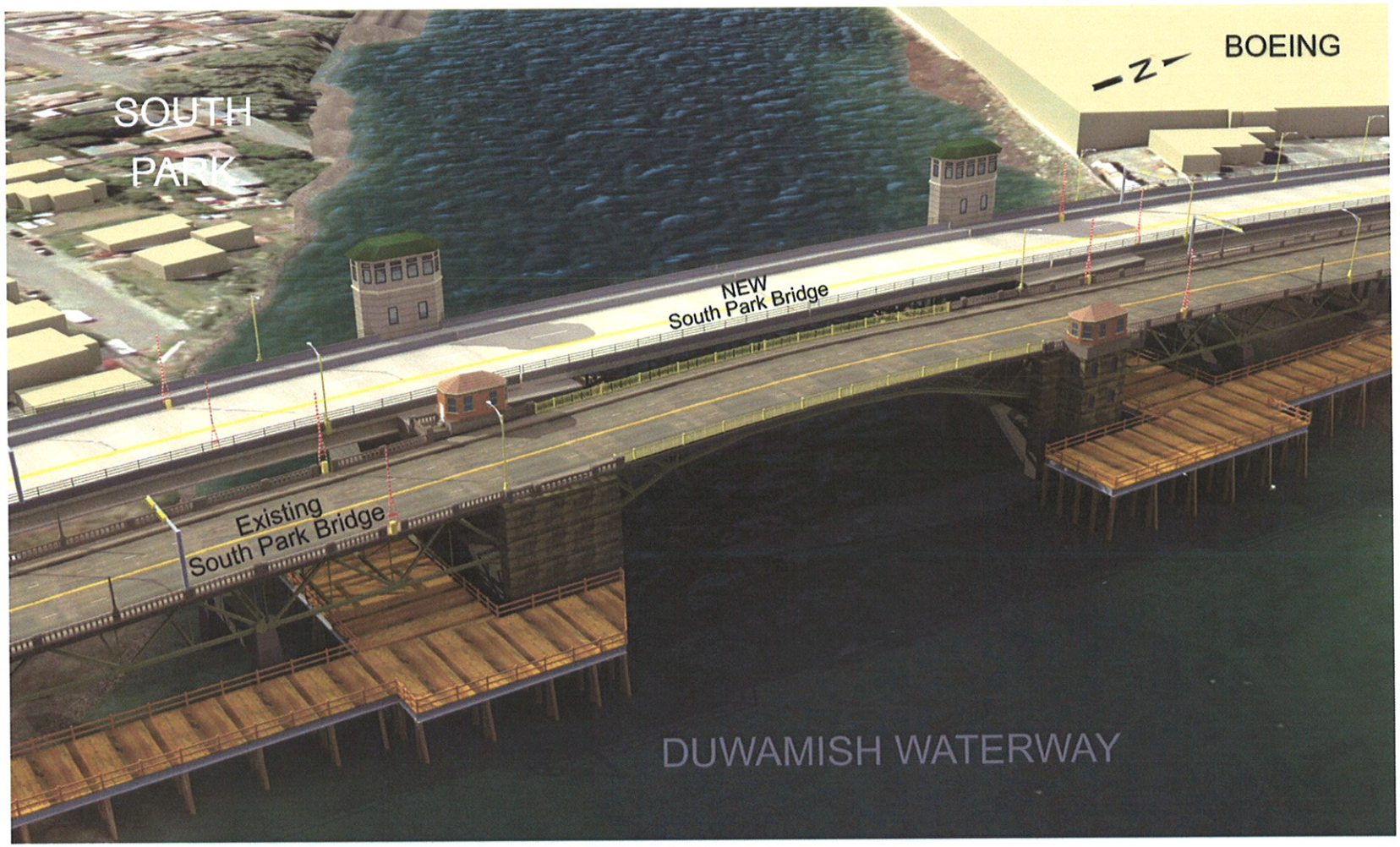


Construction of bascule piers – one substructure proposal

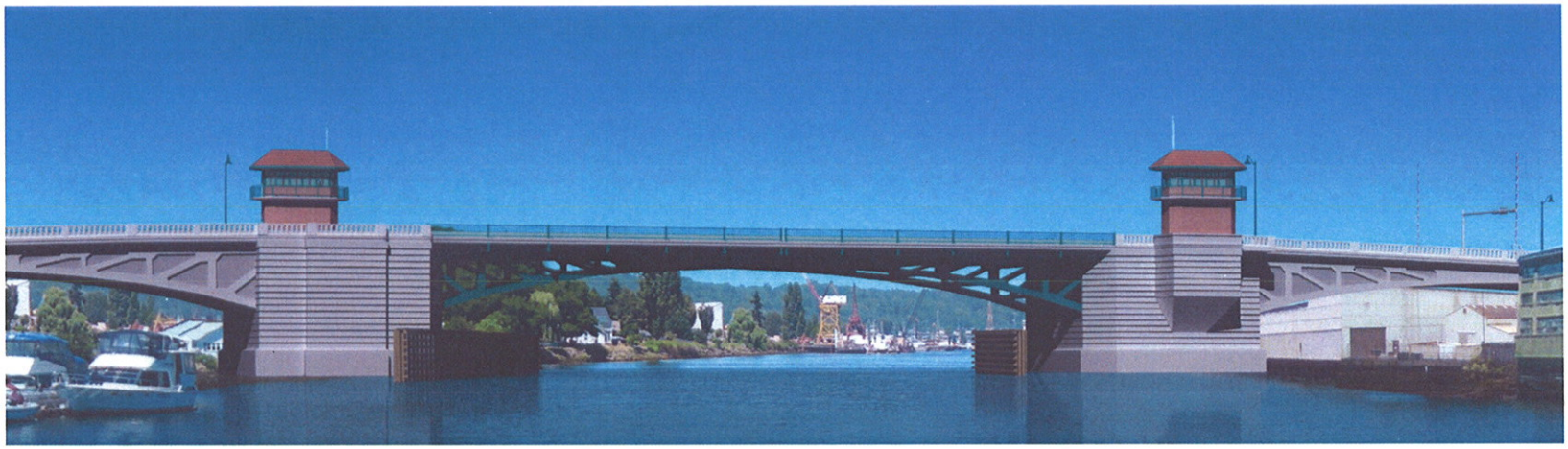




Preparing for demolition of old bridge



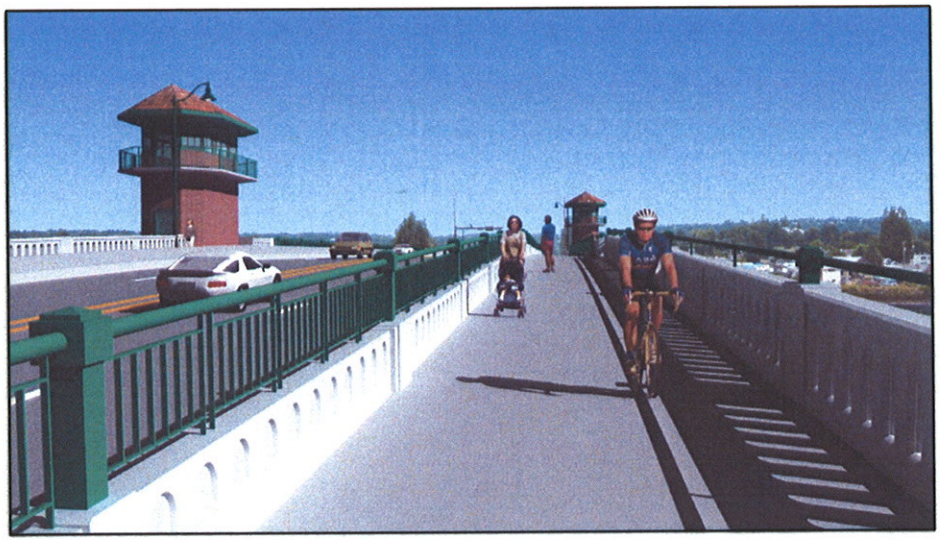
New Bascule Bridge – one idea



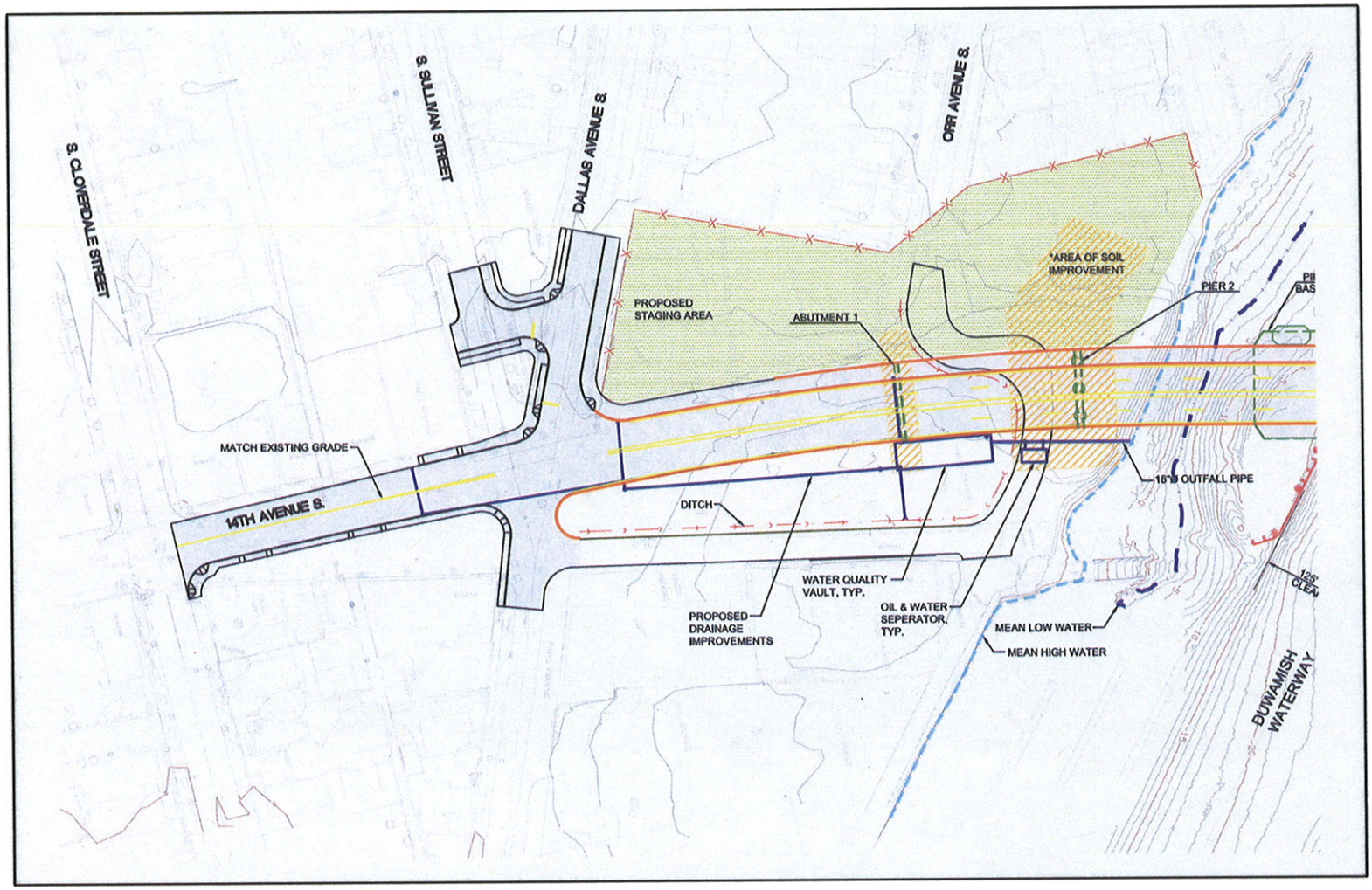
- 13' wide pedestrian/bicycle pathway
- Incorporate architectural features of existing bridge
- State of the art electrical and mechanical drive systems
- Solid deck - treat drainage

Visualization

other views of proposed bascule



Intersection south of bridge reconfigured for safety

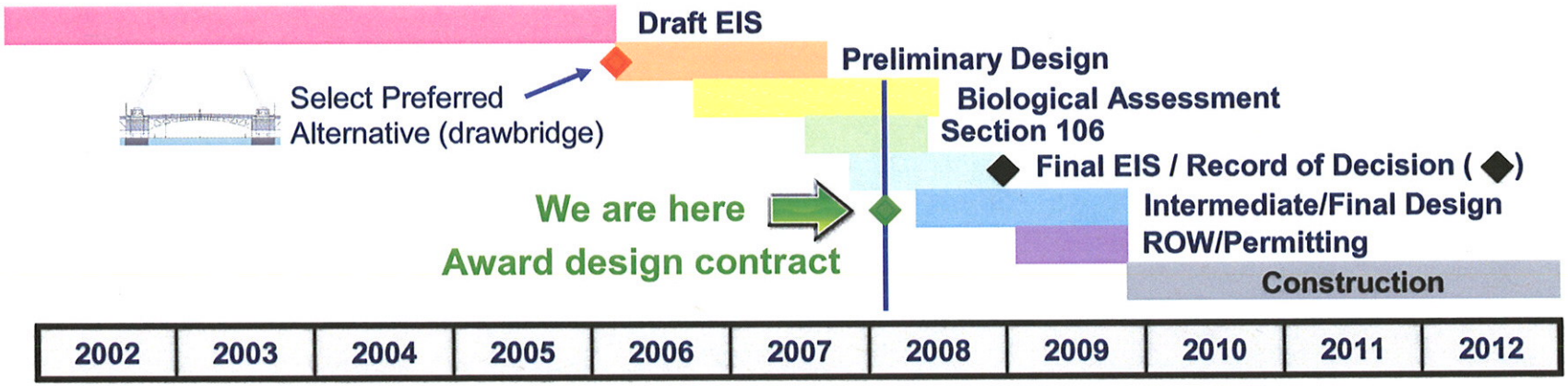


Proposed bank restoration areas

South bank at 14th Avenue South

North bank at Boeing

Schedule



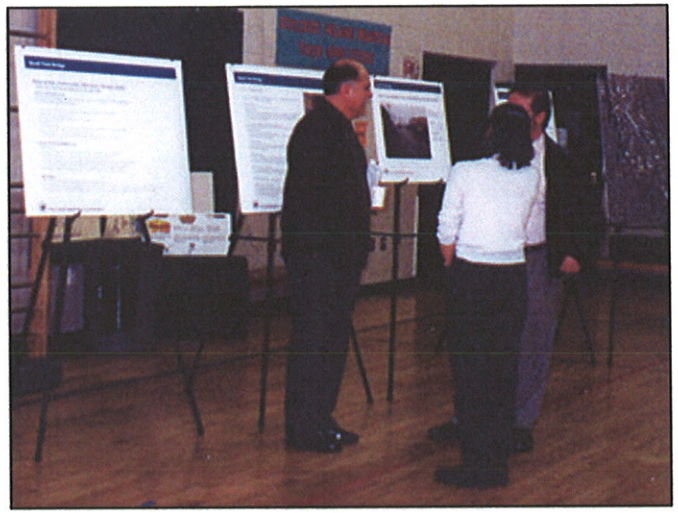
NEXT STEPS -

- Biological Assessment under review by permitting agencies
- Section 106 (National Historic Preservation Act) to be finalized
- Final EIS and Record of Decision by December 2008
- Intermediate/Final Design begins April 2008, completed Dec 2009

If funded, ready for construction in **2010**

Community Outreach

- Citizen Advisory Group (CAG)
  - 12-15 members
  - Wide range of representation
  - Dedicated!
- CAG Meetings
  - 2002 – 5 meetings
  - 2003 – 2 meetings
  - 2004 – 4 meetings
  - 2005 – 1 meeting
  - 2006 – 1 meeting
  - 2007 – on vacation
  - 2008-09 - TBD
- King County Public Meetings
  - 2002 – 4 meetings
  - 2005 – 1 meeting
  - 2007 – 1 meeting
  - 2008-09 - TBD



Project Funding

Project Funding

EIS – Design – Construction